DisplayLink USB Graphics User Manual

Software Version 7.5

All materials (c) DisplayLink 2013 and may not be used without permission

Contents

1. Introduction 4
2. PC Requirements 5
2.1. Windows 8.1 5
2.2. Windows Vista – Windows 8 5
2.3. Windows XP 6
2.4. Graphics Card Support (Windows Vista onwards) 6
2.5. Graphics Card Support (Windows XP) 7
2.6. Supported Languages 7
2.7. System Compatibility Check 8
3. Installing the DisplayLink USB Graphics Software 9
3.1. Windows 8 and Windows 8.1 9
3.2. Windows 7 10
3.3. Windows Vista 13
3.4. Windows XP 14
4. Configuring DisplayLink Displays 16
4.1. Behaviour on first connect 16
4.2. Device/Monitor Detection 16
4.3. Resolution Support 16
4.4. Windows 8 and Windows 7 - Controlling the Display 17
4.5. Windows Vista and Windows XP – Controlling the Display 20
4.5.1. Setting the Display into Extend Mode 22
4.5.2. Setting the Display into Mirror Mode 23
4.6. Windows Vista and XP – Windows Display Properties 23
4.6.1. Setting the Display into Extend Mode 24
4.6.2. Setting the DisplayLink Display to Mirror the Primary Screen 25
4.6.3. Setting the DisplayLink display as the Primary Display 25
4.6.4. Setting a Laptop Lid to do Nothing (Upon Close) 26
5. Configuring DisplayLink Ethernet 27
5.1. Opening Advanced Ethernet features 27
5.2. Configuring the adapter MAC address 28
5.3. Configuring the link speed 29
5.4. Configuring the adapter VLAN ID 29

© DisplayLink 2013 – Issue 2

5.5. Configuring Wake on Lan 30
5.6. Configure Wake on Magic Packet Only 31
5.7. Configuring Ethernet settings remotely 32
5.7.1. Network Address 33
5.7.2. VLAN ID 33
5.7.3. Wake on LAN 33
6. Windows Update 34
7. Uninstalling the DisplayLink USB Graphics Software 35
7.1. Uninstalling on Windows 7 – Windows 8.1 35
7.2. Uninstalling on Windows Vista and XP 36
8. Audio Configuration 38
8.1. Configuring USB audio on Windows 8, Windows 7 or Windows Vista 38
8.1.1. Setting USB audio as the default output 38
8.1.2. Configuring the audio output 39
8.2. Configuring USB audio on Windows XP 39
8.2.1. Setting USB audio as the default output 39
8.2.2. Configuring the audio output 40
9. Fit to TV 42
9.1. What is Fit to TV? 42
9.2. Configuration 42
10. Additional Information 44
10.1. Media Playback 44
10.2. Using Multiple DisplayLink USB Graphics devices 44
10.3. Standby and Hibernate, Shut down and Restart 44
10.4. DisplayLink USB Graphics with Multiple Users 44
10.5. Disconnecting the DisplayLink USB Graphics 44
10.6. Supported Screen Modes 45
10.7. Inferred Modes 45
10.8. Error Messages 45
10.9. Further Support 46

© DisplayLink 2013 – Issue 2

1. Introduction

Welcome to your DisplayLink USB Graphics software. It allows you to easily connect extra monitors to your laptop or desktop PC's USB port.

The connected monitors can be configured to either mirror your main screen, or extend the Windows desktop allowing visibility of more applications at the same time. The DisplayLink USB Graphics devices can also be configured to be the primary display.

DisplayLink's Graphics Host Software allows full configuration of all additional USB displays, including:

- Support for Windows XP – Windows 8.1
- Support for up to 6 additional USB Displays
- Resolutions up to 2560 x 1600 (Product dependant)
- Rotation
- Layout of displays

DisplayLink software also provides drivers for Audio and Ethernet built into the DL-3000 family

Note: Menu items and screen selections are shown in italics.

2. PC Requirements

DisplayLink software can be used any Ultrabooks, Windows Tablets, Notebooks/Laptops or Desktops.

The performance of the software is dependent upon the processing power available, as well as the operating system in use. More capable systems will provide better performance.

DisplayLink software is available for PCs running one of the following Windows operating systems:

- Windows 8.1 (32-bit or 64-bit)
- Windows 8 (32-bit or 64-bit)
- Windows 7 (32-bit or 64-bit)
- Windows Vista with Service Pack 1 or 2 (32-bit or 64-bit)
- Windows XP Home or Professional (including Tablet edition) with Service Pack 2 or 3
- Windows Server 2008 and 2008 R2

Note: 64-bit editions of XP and Windows server 2003 are not supported. Mac OS X support can be found at http://www.displaylink.com/mac

Recommended typical system requirements are:

2.1. Windows 8.1

The following system specs are recommended minimum for Windows 8.1:

- **Processor**: 1.2 gigahertz (GHz) or faster with support SSE2
- **RAM**: 2 gigabyte (GB) for 1 DisplayLink display. 4 GB or more recommended for 2 or more DisplayLink displays
- **Graphics card**: Microsoft DirectX 10 or later graphics device with WDDM driver.
- **USB**: At least one USB 2.0 or USB 3.0 port.
- 30 megabytes (MB) of free disk space.
- Computer screen for use with the DisplayLink device, if it is not integrated.
- Network access for software downloads, or access to a CD-ROM drive.

2.2. Windows Vista – Windows 8

For Windows Vista – Windows 8, the Windows Experience Index (WEI) is a useful measure of hardware level. The WEI is accessible from Computer > Properties, or from Control Panel > System.

The following system specs are recommended minimum:

- **Windows Experience Index**: WEI score of at least 3 in the 'Graphics; Desktop performance for Windows Aero' category. Overall WEI score of at least 3 as recommended by Microsoft.
- **Processor**: 1.2 gigahertz (GHz) or faster with support SSE2
- **RAM**: 2 gigabyte (GB) for 1 DisplayLink display. 4 GB or more recommended for 2 or more DisplayLink displays
- **Graphics card**: Microsoft DirectX 9 or later graphics device with WDDM driver.
- **USB**: At least one USB 2.0 or USB 3.0 port.
- 30 megabytes (MB) of free disk space.
- Computer screen for use with the DisplayLink device, if it is not integrated.
- Network access for software downloads, or access to a CD-ROM drive.

2.3. Windows XP

- **Processor**: 1.2GHz Single Core CPU or higher.
- **RAM**: 1GB memory for 1 DisplayLink display. 2 GB or more recommended for 2 or more DisplayLink displays
- **Graphics card**: Any primary graphics card with XP drivers installed.
- **USB**: At least one USB 2.0 or USB 3.0 port.
- 30 megabytes (MB) of free disk space.
- Computer screen for use with the DisplayLink device, if it is not integrated.
- Network access for software downloads, or access to a CD-ROM drive.

2.4. Graphics Card Support (Windows Vista onwards)

On Windows Vista onwards DisplayLink software interacts closely with the primary graphics card. DisplayLink support and test a single graphics card (GPU) installed in a PC from all major GPU vendors (Intel, ATI, NVidia and Via). SIS graphics cards are not supported.

The following GPU configurations may exhibit compatibility issues on Windows Vista onwards in certain circumstances:

- NVIDIA SLI in SLI mode

Other GPU configurations, including the following, are currently unsupported and will not function on Windows Windows Vista onwards:

- Crossfire
- SLI not in SLI mode
- Multiple WDDM graphics drivers active at once

2.5. Graphics Card Support (Windows XP)

All graphics cards are supported on Windows XP.

2.6. Supported Languages

The following languages are supported, on all supported operating systems:

- Arabic
- Bahasa Indonesian
- Bulgarian
- Chinese (Traditional)
- Chinese (Simplified)
- Croatian
- Czech
- Danish
- Dutch
- English
- Finnish
- French
- Greek
- German
- Hungarian
- Italian
- Japanese
- Korean
- Norwegian
- Polish
- Portuguese
- Russian
- Slovak
- Slovenian
- Spanish
- Swedish

- Turkish

Unsupported languages default to English.

2.7. System Compatibility Check

DisplayLink software will run a system compatibility check on your PC before installation. **This will make no changes to your system** and only checks for potential issues. The areas checked are:

- Primary Graphics card drivers are installed and up to date
- USB 3.0 host controller drivers are up to date
- No incompatible software drivers installed

Any issues found will be notified with a notification message, with a link for more information on how to solve the issue.

3. Installing the DisplayLink USB Graphics Software

The following section shows you how to install the DisplayLink USB Graphics software on different operating systems.

3.1. Windows 8 and Windows 8.1

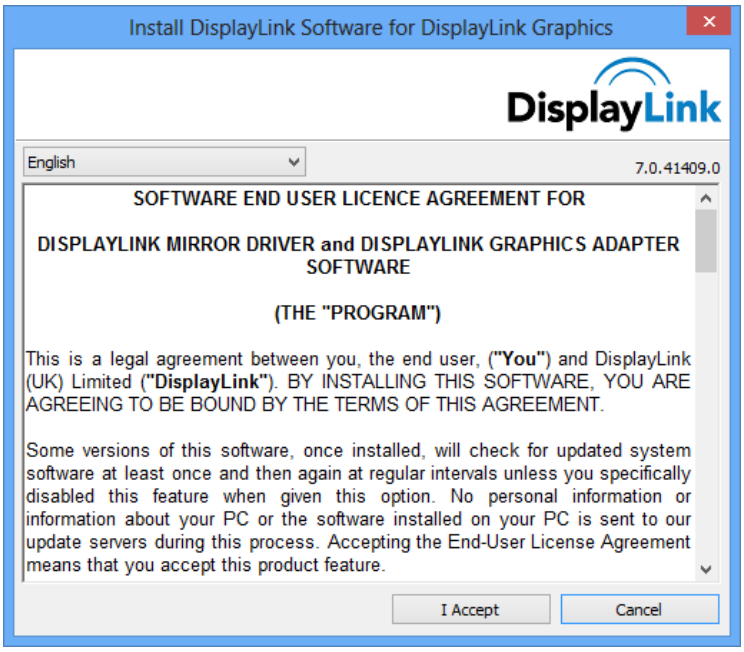
Windows 8/8.1 DisplayLink software can be installed from Windows update. Alternatively, the software can be downloaded and installed from the DisplayLink website following the steps below.

1. Double click on *Setup.exe*.

   The Windows User Account Control window opens (if enabled in the OS).

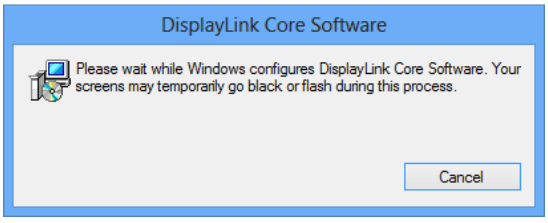
2. Click *Yes*.

   The DisplayLink software end user licence agreement window opens.


Install DisplayLink Software for DisplayLink Graphics
DisplayLink
English
7.0.41409.0
SOFTWARE END USER LICENCE AGREEMENT FOR
DISPLAYLINK MIRROR DRIVER and DISPLAYLINK GRAPHICS ADAPTER SOFTWARE
(THE "PROGRAM")
This is a legal agreement between you, the end user, ("You") and DisplayLink (UK) Limited ("DisplayLink"). BY INSTALLING THIS SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS AGREEMENT.
Some versions of this software, once installed, will check for updated system software at least once and then again at regular intervals unless you specifically disabled this feature when given this option. No personal information or information about your PC or the software installed on your PC is sent to our update servers during this process. Accepting the End-User License Agreement means that you accept this product feature.
I Accept
Cancel

3. Click *I Accept*.

   DisplayLink Core software and DisplayLink Graphics installs.

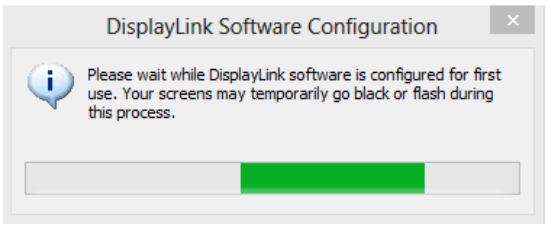

DisplayLink Core Software
Please wait while Windows configures DisplayLink Core Software. Your screens may temporarily go black or flash during this process.
Cancel

   Note: The screen may flash or go black during the install.

   No message will be shown at the end of the install.

4. Connect your DisplayLink device via the USB cable to your PC.

   A message will be shown that DisplayLink software is configuring itself for first use:


DisplayLink Software Configuration
Please wait while DisplayLink software is configured for first use. Your screens may temporarily go black or flash during this process.

5. The screen should flash and the DisplayLink device should start to extend the Windows desktop.

Note: On some machines you may need to reboot before you can use your DisplayLink enabled device.

During installation, a compatibility check is run on your system. Any potential issues found will be alerted to the user.

3.2. Windows 7

The preferred method of installation is using Window 7's Windows Update facility.

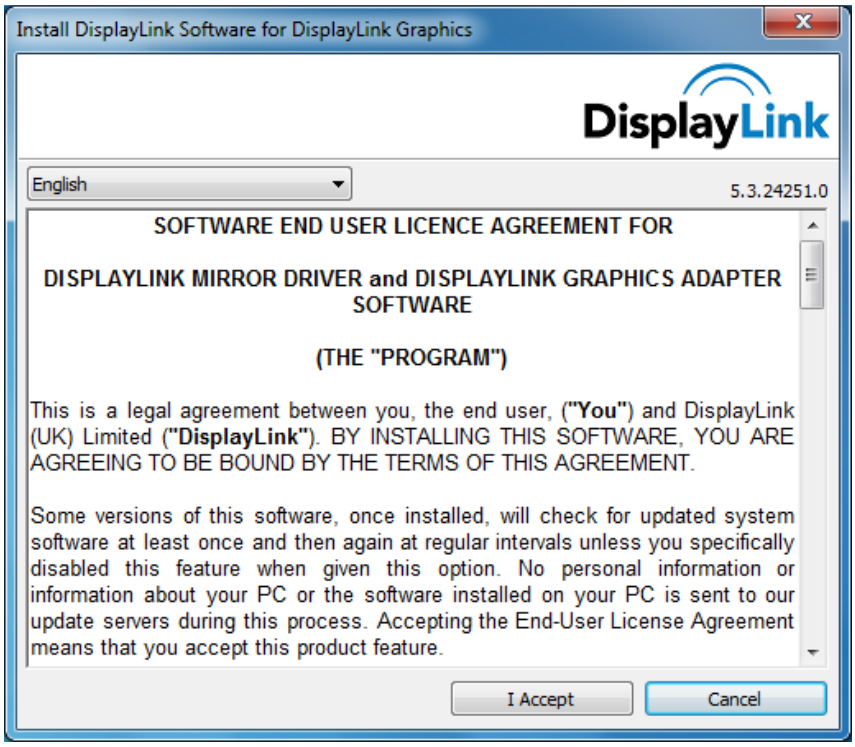
To Install the DisplayLink USB Graphics on Windows 7

1. Connect your DisplayLink device via the USB cable to your PC.

   Windows detects the new hardware and automatically downloads the driver.

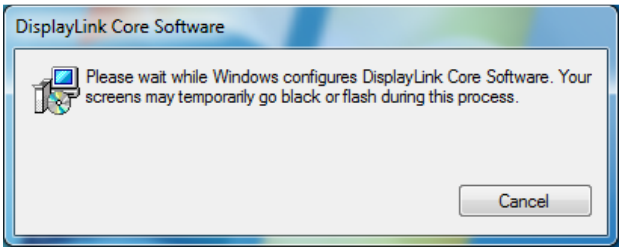
2. Once downloaded, the install will run

   The DisplayLink software end user licence agreement window opens.


Install DisplayLink Software for DisplayLink Graphics
DisplayLink
English
5.3.24251.0
SOFTWARE END USER LICENCE AGREEMENT FOR
DISPLAYLINK MIRROR DRIVER and DISPLAYLINK GRAPHICS ADAPTER SOFTWARE
(THE "PROGRAM")
This is a legal agreement between you, the end user, ("You") and DisplayLink (UK) Limited ("DisplayLink"). BY INSTALLING THIS SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS AGREEMENT.
Some versions of this software, once installed, will check for updated system software at least once and then again at regular intervals unless you specifically disabled this feature when given this option. No personal information or information about your PC or the software installed on your PC is sent to our update servers during this process. Accepting the End-User License Agreement means that you accept this product feature.
I Accept
Cancel

3. Click *I Accept*.

   The DisplayLink Core software installs


DisplayLink Core Software
Please wait while Windows configures DisplayLink Core Software. Your screens may temporarily go black or flash during this process.
Cancel

   Note: The screen may flash or go black during the install.

Alternatively you may install the software from a website download or CD-ROM:

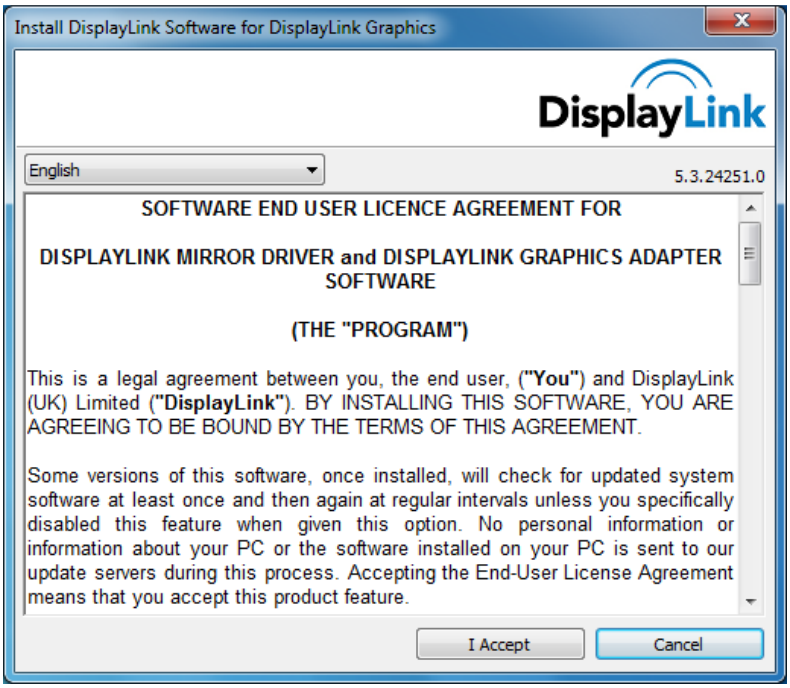
Important! Do not connect a DisplayLink device/screen to your PC before the install.

1. Double click on *Setup.exe*.

   The Windows User Account Control window opens (if enabled in the OS).

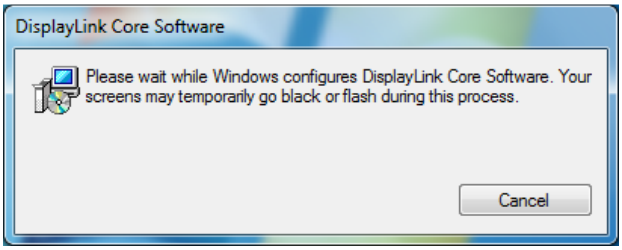
2. Click *Yes*.

   The DisplayLink software end user licence agreement window opens.


Install DisplayLink Software for DisplayLink Graphics
DisplayLink
English
5.3.24251.0
SOFTWARE END USER LICENCE AGREEMENT FOR
DISPLAYLINK MIRROR DRIVER and DISPLAYLINK GRAPHICS ADAPTER SOFTWARE
(THE "PROGRAM")
This is a legal agreement between you, the end user, ("You") and DisplayLink (UK) Limited ("DisplayLink"). BY INSTALLING THIS SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS AGREEMENT.
Some versions of this software, once installed, will check for updated system software at least once and then again at regular intervals unless you specifically disabled this feature when given this option. No personal information or information about your PC or the software installed on your PC is sent to our update servers during this process. Accepting the End-User License Agreement means that you accept this product feature.
I Accept
Cancel

3. Click *I Accept*.

   DisplayLink Core software and DisplayLink Graphics installs.


DisplayLink Core Software
Please wait while Windows configures DisplayLink Core Software. Your screens may temporarily go black or flash during this process.
Cancel

   Note: The screen may flash or go black during the install.

   No message will be shown at the end of the install.

4. Connect your DisplayLink device via the USB cable to your PC.

   Installing device driver message

5. The screen should flash and the DisplayLink device should start to extend the Windows desktop.

Note: On some machines you may need to reboot before you can use your DisplayLink enabled device.

During installation, a compatibility check is run on your system. Any potential issues found will be alerted to the user.

3.3. Windows Vista

To Install the DisplayLink USB Graphics on Windows Vista

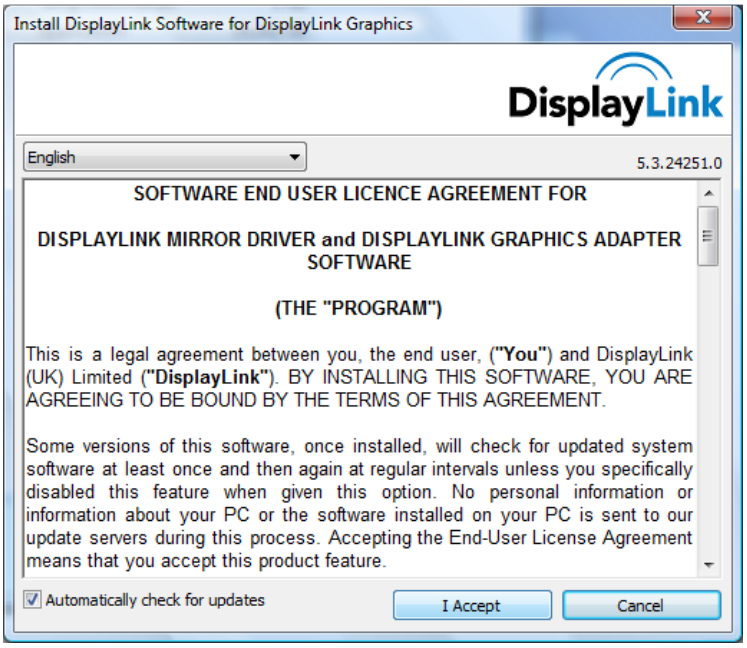
Important! Do not connect a DisplayLink device/screen to your PC before the install.

1. Double click on Setup.exe.

   The Windows User Account Control window opens (if enabled in the OS).

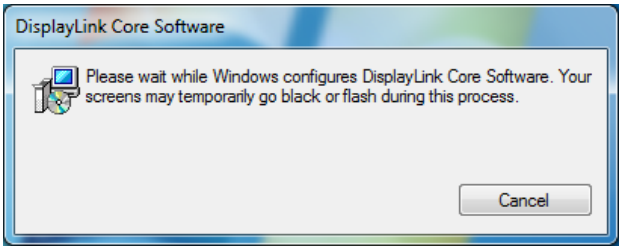
2. Click Continue.

   The DisplayLink software end user licence agreement window opens.


Install DisplayLink Software for DisplayLink Graphics
DisplayLink
English
5.3.24251.0
SOFTWARE END USER LICENCE AGREEMENT FOR
DISPLAYLINK MIRROR DRIVER and DISPLAYLINK GRAPHICS ADAPTER SOFTWARE
(THE "PROGRAM")
This is a legal agreement between you, the end user, ("You") and DisplayLink (UK) Limited ("DisplayLink"). BY INSTALLING THIS SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS AGREEMENT.
Some versions of this software, once installed, will check for updated system software at least once and then again at regular intervals unless you specifically disabled this feature when given this option. No personal information or information about your PC or the software installed on your PC is sent to our update servers during this process. Accepting the End-User License Agreement means that you accept this product feature.
Automatically check for updates
I Accept
Cancel

3. Click *I Accept*.

   DisplayLink Core software and DisplayLink Graphics installs.


DisplayLink Core Software
Please wait while Windows configures DisplayLink Core Software. Your screens may temporarily go black or flash during this process.
Cancel

   Note: The screen may flash or go black during the install.

   No message will be shown at the end of the install.

4. Connect your DisplayLink device via the USB cable to your PC.

   Installing device driver message

5. The screen should flash and the DisplayLink device should start to extend the Windows desktop.

Note: On some machines you may need to reboot before you can use your DisplayLink enabled device.

During installation, a compatibility check is run on your system. Any potential issues found will be alerted to the user.

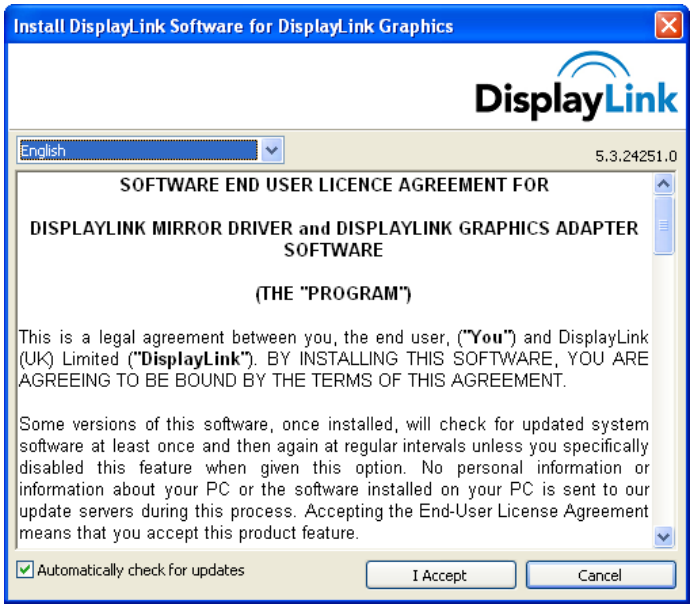
3.4. Windows XP

To Install the DisplayLink USB Graphics on Windows XP

Important! Do not connect a DisplayLink device/screen to your PC before the install.

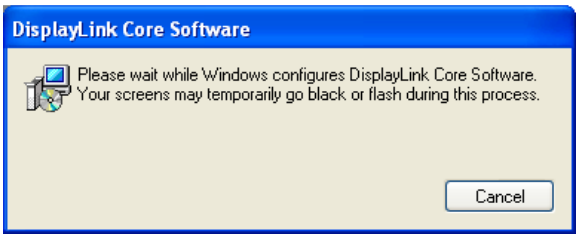
1. Double click on Setup.exe.

   The DisplayLink software end user licence agreement window opens.


Install DisplayLink Software for DisplayLink Graphics
DisplayLink
English
5.3.24251.0
SOFTWARE END USER LICENCE AGREEMENT FOR
DISPLAYLINK MIRROR DRIVER and DISPLAYLINK GRAPHICS ADAPTER SOFTWARE
(THE "PROGRAM")
This is a legal agreement between you, the end user, ("You") and DisplayLink (UK) Limited ("DisplayLink"). BY INSTALLING THIS SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS AGREEMENT.
Some versions of this software, once installed, will check for updated system software at least once and then again at regular intervals unless you specifically disabled this feature when given this option. No personal information or information about your PC or the software installed on your PC is sent to our update servers during this process. Accepting the End-User License Agreement means that you accept this product feature.
Automatically check for updates
I Accept
Cancel

2. Click *I Accept*.

   DisplayLink Core software and DisplayLink Graphics installs.


DisplayLink Core Software
Please wait while Windows configures DisplayLink Core Software.
Your screens may temporarily go black or flash during this process.
Cancel

Note: The screen may flash or go black during the install.

3. Connect your DisplayLink device via the USB cable to your PC. The following message (or similar) will be seen.

Windows installs the DisplayLink device.

Note: The screen may flash or go black during the install.

During installation, a compatibility check is run on your system. Any potential issues found will be alerted to the user.

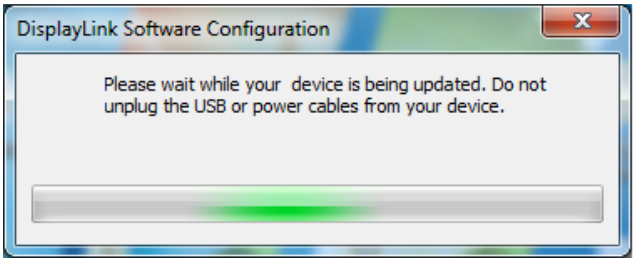
4. Configuring DisplayLink Displays

This section describes how to use DisplayLink's Software. The section is divided into sub-sections relating to your operating system.

Note: The terminology for "mirror mode" can vary between operating systems and the DisplayLink GUI. The terms "Clone", "Mirror" and "Duplicate" are interchangeable and provide the same function of making the contents of the 2 selected displays identical.

4.1. Behaviour on first connect

When connecting a device based on the DL-3x00 family, the firmware version will be checked by the host software. If they do not match, the firmware on the device will be updated. While the firmware is updating, a window similar to that shown below will be shown.


DisplayLink Software Configuration
Please wait while your device is being updated. Do not unplug the USB or power cables from your device.

This process may take up to 20 seconds. Once complete, your device should begin to function.

4.2. Device/Monitor Detection

The DisplayLink System tray GUI, covered below, will only be available when a DisplayLink device is detected on the USB bus.

When using a DL-1x0 or DL-1x5 based product, a new monitor will also be added in Windows Display Properties, even if there is no monitor connected to the device.

DL-3x00 devices now support monitor detect, therefore a new display will only be available once the device is connected to the PC AND a monitor is attached to the video output of the device.

4.3. Resolution Support

When a monitor is connected to a DisplayLink device, the DisplayLink host software reads the supported modes from the display. These are the only supported modes offered by the DisplayLink software, through the DisplayLink UI or Windows Display Properties. The DisplayLink software will use the montior's preferred mode by default.

If the monitor does not report any supported modes, DisplayLink will offer a list of default modes.

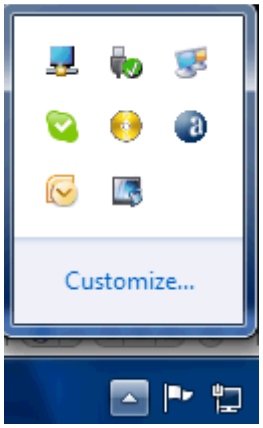
Note: not all supported monitor modes may be offered if they are not supported by your DisplayLink device.

4.4. Windows 8 and Windows 7 - Controlling the Display

When devices are attached, an icon appears in the taskbar. This gives you access to the DisplayLink manager menu.

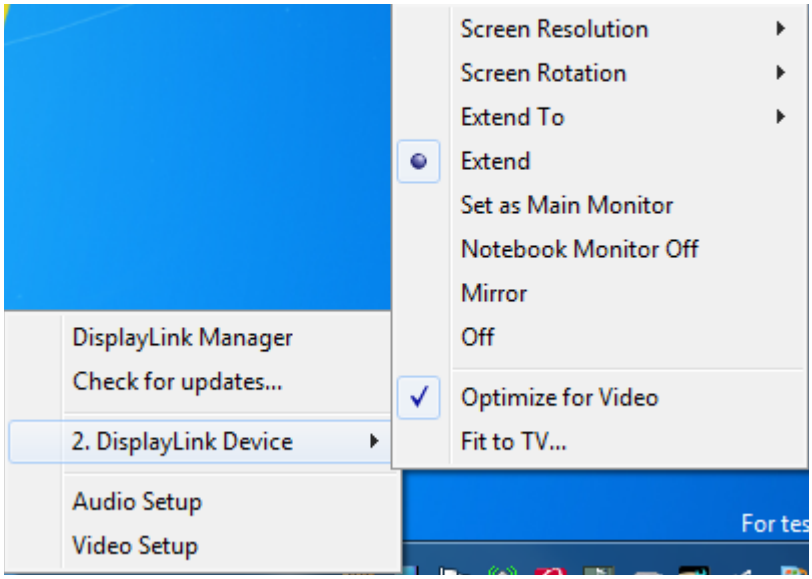
To use the DisplayLink Manager Menu

1. From the taskbar, click the *Show hidden icons* arrow to show all available icons.



2. Click the DisplayLink icon .

   A menu appears with several options. These are shown and described below.



Menu Option	Sub-menu Option	Description
DisplayLink Manager		This is the UI title. Clicking on this item will open Windows screen resolution.
Check for Updates		Connects to the Microsoft Windows Update Server to check for newer software versions and downloads them, if available.
DisplayLink devices	Options to configure this DisplayLink device	In this section of the menu, a list of connected DisplayLink devices will appear. Each of these devices has its own sub-configuration menu. These Submenu options are covered in the table below.
Audio Setup		Opens the Windows Audio Configuration Window.
Video Setup		Opens the Windows Screen Resolution window.

Display Menu	Description	
Screen Resolution		Displays a list of available resolutions. Some resolutions may be enclosed by [ ]. Please see, Inferred Modes. This option is not available in mirror mode, as the resolution is defined as the resolution of the main monitor.
Screen Rotation	Normal	No rotation is applied to the DisplayLink display
	Rotated Left	Rotates the extended or mirrored display by 270 degrees clockwise.
	Rotated Right	Rotates the extended or mirrored display by 90 degrees clockwise.
	Upside-Down	Rotates the extended or mirrored display by 180 degrees clockwise.
Extend To	Right	Extends the display to the right of the main display.
	Left	Extends the display to the left of the main display.

Display Menu	Description	
	Above	Extends the display above of the main display.
	Below	Extends the display below the main display.
Extend		Extends your Windows desktop onto this display.
Set as Main Monitor		Sets this screen as the main display.
Notebook Monitor Off		Switches off the display of the notebook and makes the DisplayLink display the main display. Note: This option will only appear when 1 DisplayLink USB screen, is connected. It will also only appear on Laptop computers.
Mirror		Copies what is on the main display and reproduces it on this display. Note: The resolution of this display and the primary must be the same in mirror mode. This may be lower than the preferred resolution of the display. It is only possible to mirror 2 displays. If a display is already set to mirror mode, this option will be greyed out for the other DisplayLink displays and not available.
Off		Switches off this display.
Optimize for Video		Select this option for better movie playback performance on the DisplayLink enabled displays. Only select this option when playing back video content. **Note**: Text may appear less clear when enabled.

Display Menu	Description	
Fit to TV		If the Windows desktop does not completely appear on the TV, this option can be used to adjust the size of the Windows desktop. See "Fit to TV" for details on how to configure this feature. Notes: • This option will only appear when 1 DisplayLink USB screen, is connected • This option will only work in extend mode. Selecting the option in mirror mode will extend the displays.

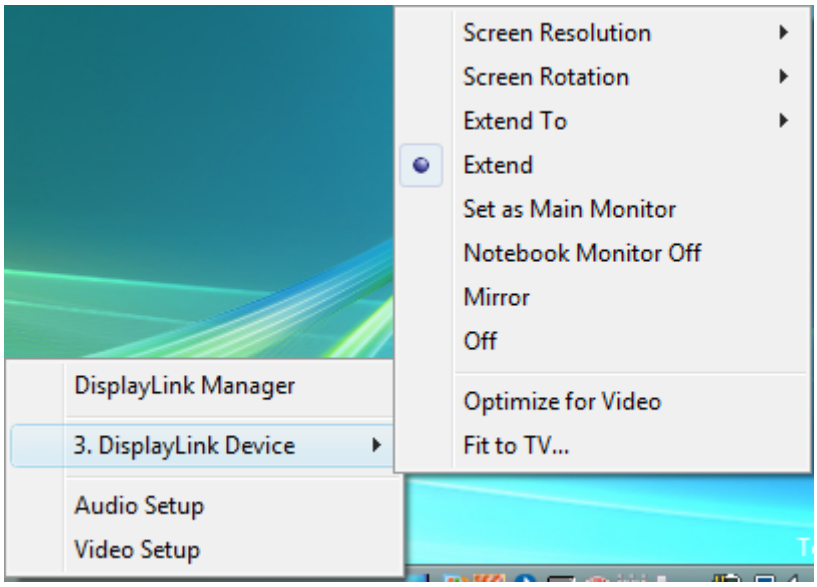
4.5. Windows Vista and Windows XP – Controlling the Display

When devices are attached, an icon appears in the taskbar. This gives you access to the DisplayLink manager menu.

To use the DisplayLink Manager Menu

1. Click the DisplayLink icon on the taskbar.

   The menu appears as shown below.



2. Select an option from the menu, using the following table for the options available.

Menu Option	Sub-menu Option	Description
DisplayLink Manager		This is the UI title. Clicking on this item will open Windows screen resolution.
DisplayLink devices	Options to configure this DisplayLink device	In this section of the menu, a list of connected DisplayLink devices will appear. Each of these devices has its own sub-configuration menu. These Submenu options are covered in the table below.
Audio Setup		Opens the Windows Audio Configuration Window.
Video Setup		Opens the Windows Display Settings window.

Display Menu	Description	
Screen Resolution		Displays a list of available resolutions. Some resolutions may be enclosed by [ ]. Please see, Inferred Modes. This option is not available in mirror mode, as the resolution is defined as the resolution of the main monitor.
Screen Rotation	Normal	No rotation is applied to the DisplayLink display
	Rotated Left	Rotates the extended or mirrored display by 270 degrees.
	Rotated Right	Rotates the extended or mirrored display by 90 degrees.
	Upside-Down	Rotates the extended or mirrored display by 180 degrees.
Extend To	Right	Extends the display to the right of the primary display.
	Left	Extends the display to the left of the primary display.
	Above	Extends the display above of the primary display.
	Below	Extends the display below the primary display.

Display Menu	Description	
Extend		Extends your Windows desktop onto this display.
Set as Main Monitor		Sets this screen as the primary display.
Notebook Monitor Off		Switches off the display of the notebook and makes the DisplayLink display the main display. Note: This option will only appear when 1 DisplayLink USB screen, is connected. It will also only appear on Laptop computers.
Mirror		Copies what is on the main display and reproduces it on this display. Note: The resolution of this display and the primary must be the same in mirror mode. This may be lower than the preferred resolution of the display.
Off		Switches off this display.
Optimize for Video (Windows Vista Only)		Select this option for better movie playback performance on the DisplayLink enabled displays. Only select this option when playing back video content. **Note**: Text may appear less clear when enabled.
Fit to TV		If the Windows desktop does not completely appear on the TV, this option can be used to adjust the size of the Windows desktop. See “Fit to TV” for details on how to configure this feature. Notes: • This option will only appear when 1 DisplayLink USB screen, is connected • This option will only work in extend mode. Selecting the option in mirror mode will extend the displays.

4.5.1. Setting the Display into Extend Mode

In extend mode, the monitor attached to the DisplayLink USB Graphics device forms part of the extended Windows desktop. The extra desktop area is a great productivity aid, allowing more applications or documents to be visible at a time.

To set the display into Extend Mode

1. Click on the DisplayLink icon .
2. Select *Extend*.

The device is now extended in the direction it was the last time the display was in this mode. For more control, use the Extend To submenu and select one of the options. This puts the device into extend mode, and places it to the Left/Right/Above/Below the main (primary) monitor.

4.5.2. Setting the Display into Mirror Mode

In mirror mode, the monitor attached to the DisplayLink USB Graphics device duplicates what is on the primary display.

To set the display into Mirror mode

1. Click on the DisplayLink icon .
2. Select *Mirror*.

The resolution, colour depth and refresh rate of the primary screen are replicated on the monitor connected to the DisplayLink USB Graphics device.

If the monitor connected to the DisplayLink USB Graphics device supports a lower resolution than the primary display, then the primary graphics device will have its resolution changed automatically to ensure the whole picture fits on the external screen. Where the monitor connected to the DisplayLink USB Graphics device is of a larger size than the primary screen the image will be letter-boxed to keep the aspect ratio correct.

4.6. Windows Vista and XP – Windows Display Properties

You can also configure the DisplayLink USB Graphics device from the Windows Display Properties dialog box.

To open the Windows Display Properties on Windows Vista

1. Right-click on the Desktop.
2. Click Personalize.
3. Click Display Settings.

   The Display Settings window opens.

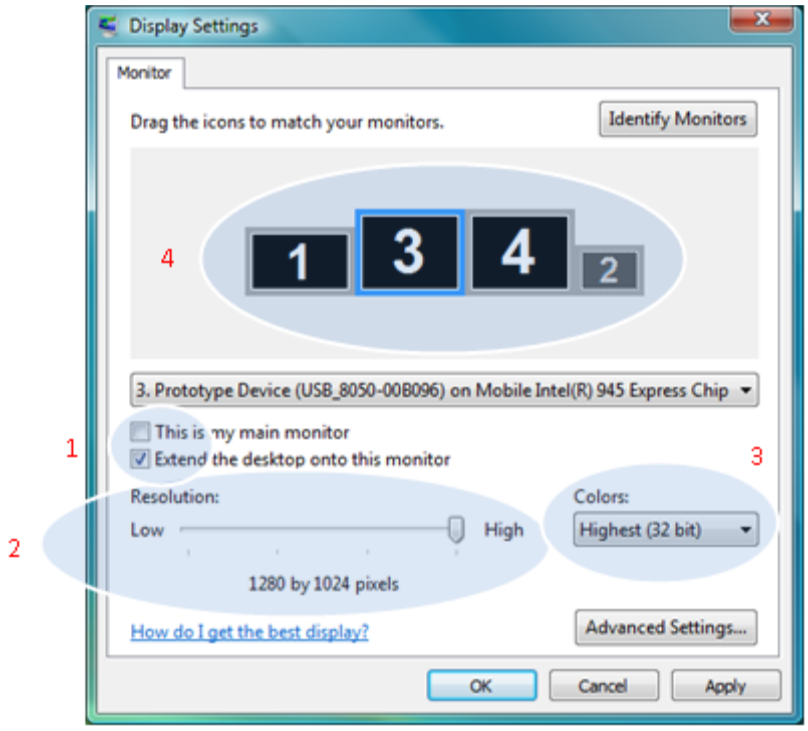


Figure 1: Display Setting - Vista

Select the display to be configured. Its mode, resolution, colour quality and position can all be controlled from here.

To open the Windows Display Properties on Windows XP

1. Right-click on the Desktop.
2. Select Properties.

   The Display Properties dialog opens.
3. Select the *Settings* tab.

4.6.1. Setting the Display into Extend Mode

Use this procedure when you want to extend the Windows desktop to the DisplayLink display. This allows many different applications to be spread over multiple displays, to be able to see multiple applications at the same time.

To set the display to Extend Mode using Windows Display properties

1. Select Extend the desktop onto this monitor checkbox (1 in Figure 1).
2. Arrange the screen resolution using the *Resolution* slide bar. (2)
3. Select the colour quality from the *Colors* drop-down list. (3).
4. Arrange its position with respect to the other monitors on the extended desktop in using the drag area (4).
5. Click *OK* to save your changes.

For more detailed mode setting, including the refresh rate, click Advanced Settings button, then the Adapter tab then on the List all modes button. All valid combinations of resolution, colour quality and refresh rate are listed. For CRT monitors, it is best to use a high refresh rate so as to avoid discomfort due to flicker. Flat panel monitors do not flicker and a low refresh rate is adequate.

To set the display to Extend Mode using the DisplayLink menu

1. From the taskbar, click on the DisplayLink icon .
2. Select *Extend*.

4.6.2. Setting the DisplayLink Display to Mirror the Primary Screen

Mirror mode copies what is on the main display and reproduces it on the secondary display.

To set the display into Mirror Mode

1. Uncheck the *Extend the desktop onto this monitor* checkbox (1 in Figure 1).
2. Click Apply.

To set the display into Mirror mode using the DisplayLink menu

1. From the taskbar, click on the DisplayLink icon .
2. Select *Mirror*

Note: The display resolution of the primary display and the DisplayLink display may be changed to a lower resolution. In mirror mode, both screens must output the same resolution, which may not be the maximum resolution of the display.

This mode is NOT recommended if using the DisplayLink display as the primary laptop display, as it is unlikely to provide the optimum resolution for the DisplayLink display. Please see, *Setting the DisplayLink display as the Primary Display*.

4.6.3. Setting the DisplayLink display as the Primary Display

To make the DisplayLink USB Graphics the Primary Display

1. Select the *This is my main monitor* checkbox (1 in Figure 1).
2. Click *Apply*.

Note: On some PCs and laptops it is necessary to disable the main display (clear the Extend the desktop onto this monitor checkbox for the main display) as part of the same settings change. The reason for this is that many primary graphics card drivers tend to make the laptop screen primary if it is enabled. The only workaround for this is to disable the laptop screen to allow another screen to be primary. To do this:

1. Select the *This is my main monitor* checkbox (1 in Figure 1) of the DisplayLink display.
2. Select the primary display (Display 1).

3. Uncheck the *Extend the desktop onto this monitor* checkbox (1 in Figure 1).
4. Click *Apply*.

The DisplayLink USB Graphics device stays primary if the PC enters hibernate or suspend mode or is rebooted. If the DisplayLink USB Graphics device is detached from the computer while it was set as the main monitor, the computer's display will become the main monitor again..

To make the DisplayLink USB Graphics the Primary Display using the DisplayLink menu

1. From the taskbar, click on the DisplayLink icon .
2. Select Set as Main Monitor.

4.6.4. Setting a Laptop Lid to do Nothing (Upon Close)

It is possible to use a laptop with a DisplayLink USB device and conveniently have the laptop closed on the side by setting its action when closing the lid to 'do nothing' , and then making the DisplayLink USB Graphics device screen primary while disabling the main screen. The laptop lid can then be closed and the laptop used with only the DisplayLink USB Graphics device screen and with and external keyboard and mouse.

To set a laptop to do nothing

1. Select Start menu > Control Panel > Power Options.
2. Select *Choose* what closing the lid does.
3. From When I close the lid, select *Do nothing* from the *On battery* and *Plugged in* drop down list.

5. Configuring DisplayLink Ethernet

Products based on the DL-3900 and DL-3700 can include gigabit Ethernet from DisplayLink.

The Ethernet connection supports 10MB, 100MB or Gigabit Ethernet in full duplex. These speeds will be auto negotiated.

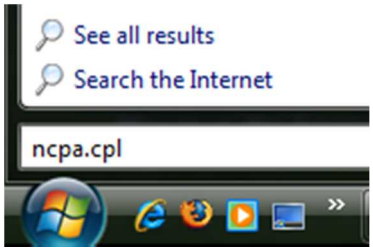
Half duplex connections, eg to network hubs, are not supported. Network speeds will be very slow when using the DisplayLink Ethernet connection at half duplex.

There are Ethernet features that can be configured. The screenshots below show the configuration on Windows 7, however the configuration is the same for all other Windows versions.

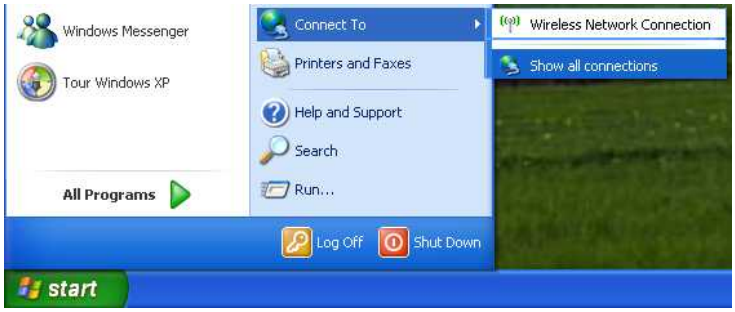
Note: it is unlikely you will need to configure any of these settings in a home environment. Contact your administrator to find out if you need to configure any of the settings in this section.

5.1. Opening Advanced Ethernet features

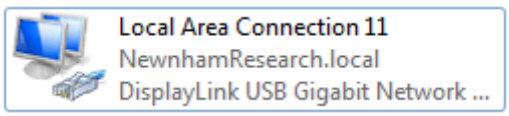
On Windows 8, Windows 7 or Windows Vista, type *ncpa.cpl* into the Start menu search box:



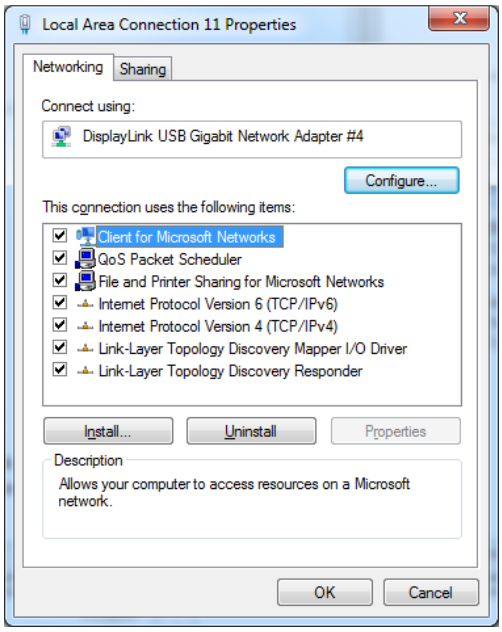
On Windows XP, from the Start button, select *Connect To -> Show all connections*



The *Network Connections* window opens. Locate the *DisplayLink USB Gigabit Network*:

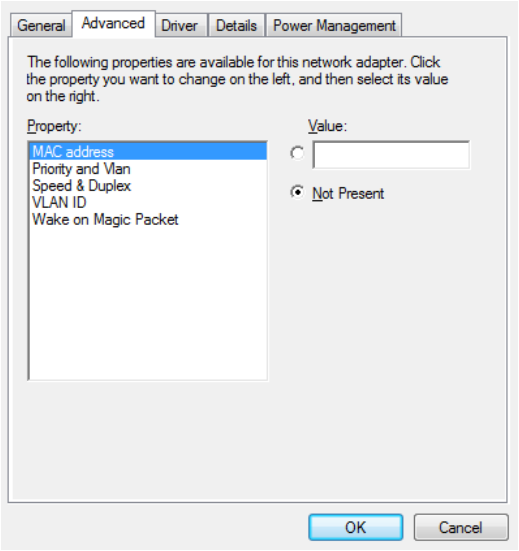


Right click on the icon and choose *Properties*, then select *Configure…*



Choose the Advanced Tab

5.2. Configuring the adapter MAC address

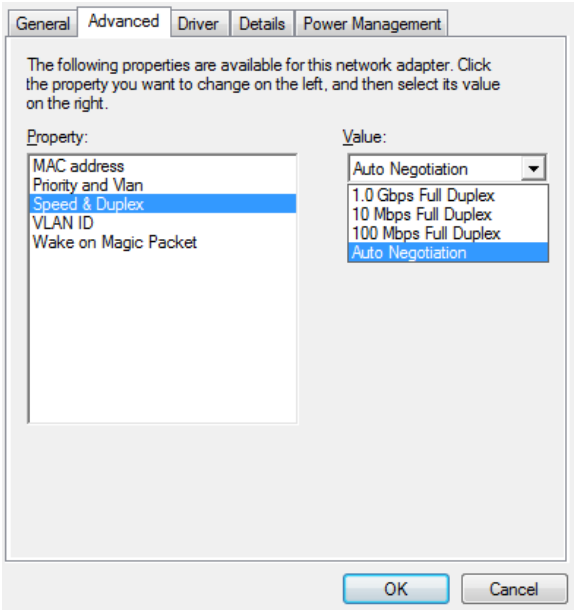


By default, every DisplayLink Ethernet adapter has its own unique layer 2 MAC address. This MAC address will be used by default, if the option *Not Present* is selected. The MAC address can be changed in the advanced properties.

To change the MAC address, Select the *Value* option and enter the new MAC address in the format XXXXXXXXXXXX, where X is a hex digit between 0 and F.

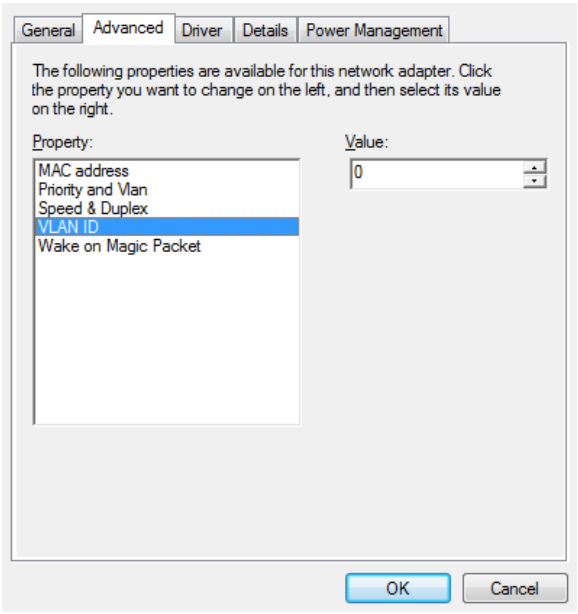
Click *OK* to apply the change

5.3. Configuring the link speed



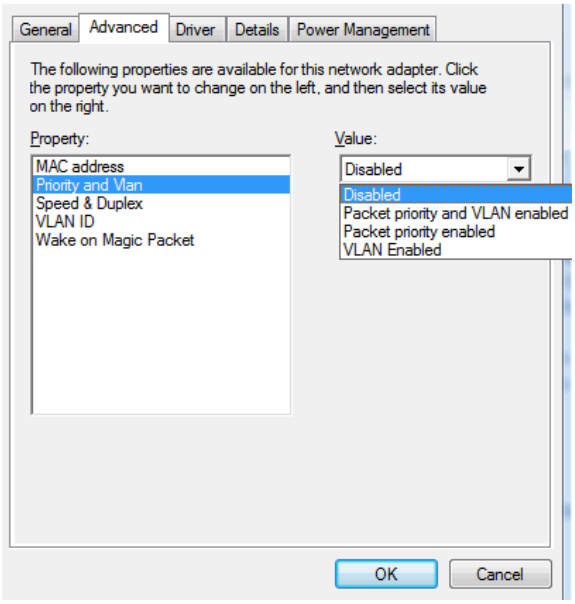
The link speed can be set Auto negotiate (default), 10Mbps full duplex, 100Mbps full duplex or 1Gbps full duplex. Half duplex speeds are not supported.

5.4. Configuring the adapter VLAN ID



The VLAN tag can be set. By default the VLAN tag is set to 0, which will transmit all packets untagged. The VLAN tag can be between 1 and 4095.

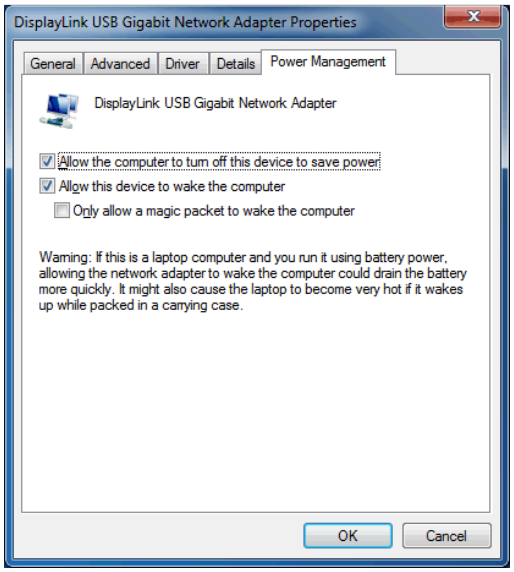
On Windows 7 and Windows 8 VLAN Tagging will also need to be enabled under the *Priority and Vlan* menu. This option is not available on Windows XP or Windows Vista:



Click *OK* to apply the change

5.5. Configuring Wake on Lan

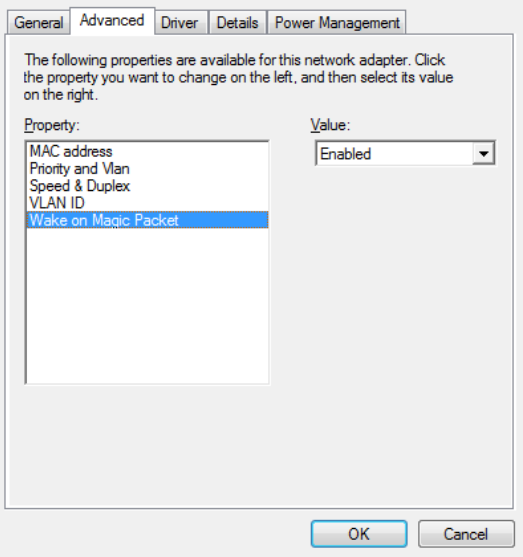
Wake on Lan is enabled and disabled under the *Power Management* tab:


DisplayLink USB Gigabit Network Adapter Properties
General
Advanced
Driver
Details
Power Management
DisplayLink USB Gigabit Network Adapter
Allow the computer to turn off this device to save power
Allow this device to wake the computer
Only allow a magic packet to wake the computer
Warning: If this is a laptop computer and you run it using battery power, allowing the network adapter to wake the computer could drain the battery more quickly. It might also cause the laptop to become very hot if it wakes up while packed in a carrying case.
OK
Cancel

To enable Wake on LAN, which will wake the computer on **Link Up** and **Magic packet**, check the box to *Allow this device to wake the computer*.

Note: This option will be greyed out if not supported by your PCs USB Host controller or BIOS.

Wake on Magic Packet also needs to be enabled under the *Advanced* tab:

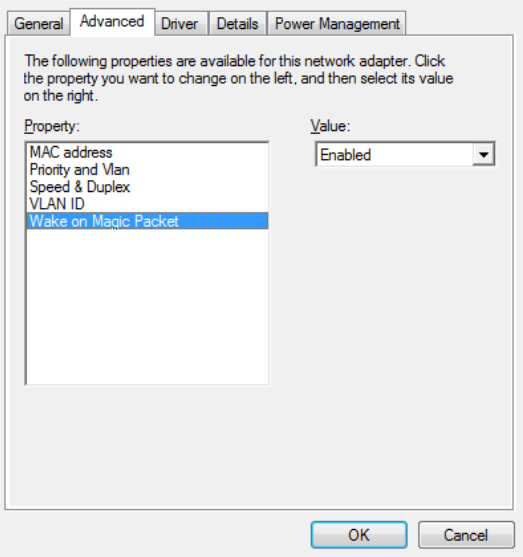


The DisplayLink device will need to be disconnected and reconnected to the USB bus before the settings take effect.

Wake on LAN will wake the PC from an S3 (suspend or sleep) state. It may fail if the PC turns off the USB connection during S3 on battery power. It will not wake the PC from an S4 (Hibernate) or S5 (Off) state.

5.6. Configure Wake on Magic Packet Only

To allow Wake on Magic packet only, also check the option to *Only allow a magic packet to wake the computer*. Also Enable Wake on Magic Packet under the Advanced Tab:



After applying the changes, the DisplayLink device will need to be disconnected and reconnected to the USB bus before the settings take effect.

Wake on LAN will wake the PC from an S3 (suspend or sleep) state. It may fail if the PC turns off the USB connection during S3 on battery power. It will not wake the PC from an S4 (Hibernate) or S5 (Off) state.

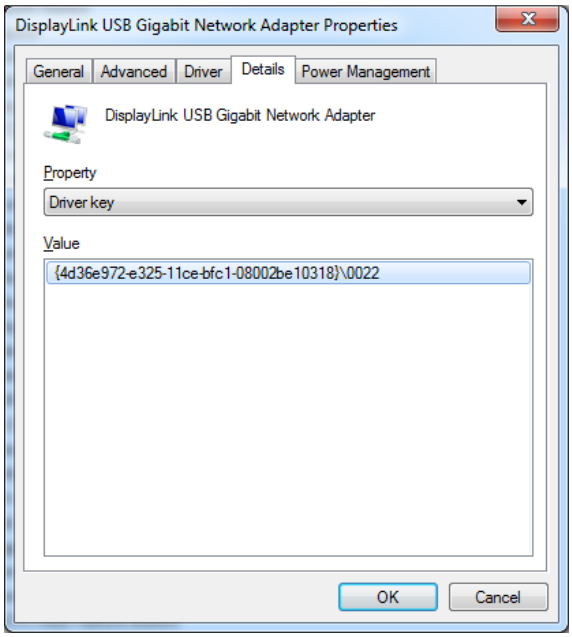
5.7. Configuring Ethernet settings remotely

This section is designed for IT administrators only to allow them to remotely set Ethernet parameters. This section should only be followed if you are an advanced user, familiar with the Windows registry.

It is possible to set the Ethernet options remotely through the Windows registry on the PC. The settings are stored under:

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Class\{4D36E972-E325-11CE-BFC1-08002bE10318}

There is a list of numeric keys under here, starting at 0000. Each of the keys are the settings for a network card. This can be found under the details tab, under the Driver Key properties. In the example below, it is 0022:



The parameters are held below this registry key.

5.7.1. Network Address

The network address can be set by adding a new String Value, with the Name *NetworkAddress*. The value should be in the format XXXXXXXXXXXX, where X is a hex digit between 0 and F.

5.7.2. VLAN ID

The VLAN ID can be set by adding a new String Value, with the Name *VlanID*. The value should be between 0 and 4095. Setting 0 will disable VLAN tagging.

5.7.3. Wake on LAN

Wake on LAN is enabled by setting the *PnPCapabilities* to “0”. To disable Wake on LAN, set *PnPCapabilities* to “110” (Hex).

To set the Wake on LAN method, add a String Value with the Name *WakeOnLan* and a value. A list of the possible values are stored below here in the registry under Ndi/params/WakeOnLan/enum. Use the Name (0 to 3) of these enums as the Value for *WakeOnLan*

6. Windows Update

On Windows 7 onwards, the DisplayLink software connects to the Microsoft Windows update site to obtain the latest DisplayLink driver. On selecting “Check for updates”, the DisplayLink software connects to Windows update, downloads and installs the latest software.

7. Uninstalling the DisplayLink USB Graphics Software

The method for uninstalling differs slightly depending on your operating system.

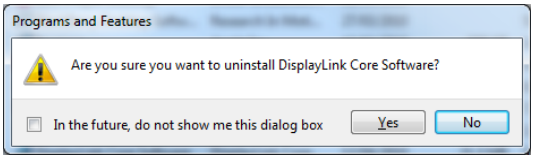
7.1. Uninstalling on Windows 7 – Windows 8.1

Use this procedure to uninstall the DisplayLink USB Graphics software from Windows 7 or Windows 8.

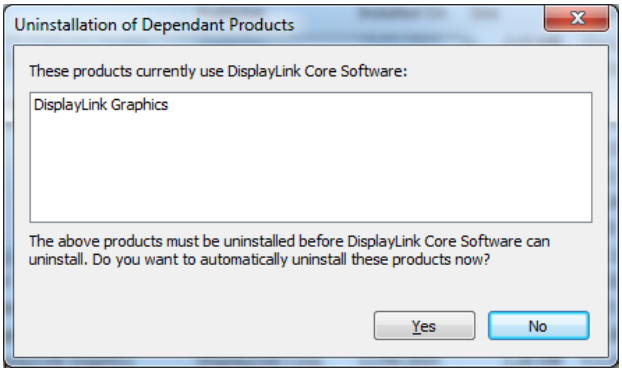
To uninstall the DisplayLink USB Graphics software on Windows 7 - Windows 8.1

1. From the Start Menu, find Control Panel.
2. From the Programs item, click *Uninstall program*.
3. Double click on *DisplayLink Core software*.

   A windows confirmation dialog opens (if enabled)


Programs and Features
Are you sure you want to uninstall DisplayLink Core Software?
In the future, do not show me this dialog box
Yes
No

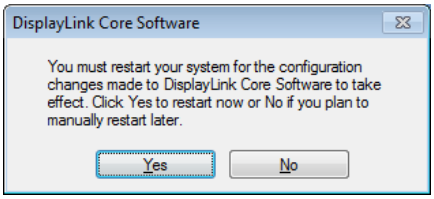
4. Click *Yes*.
5. A message may appear to state which software packages will also be uninstalled


Uninstallation of Dependant Products
These products currently use DisplayLink Core Software:
DisplayLink Graphics
The above products must be uninstalled before DisplayLink Core Software can uninstall. Do you want to automatically uninstall these products now?
Yes
No

   Click *Yes* to uninstall the packages that use DisplayLink Core Software

   The uninstaller automatically uninstalls the software.

6. Once uninstalled, you will be prompted to reboot


DisplayLink Core Software
You must restart your system for the configuration changes made to DisplayLink Core Software to take effect. Click Yes to restart now or No if you plan to manually restart later.
Yes
No

   Click *Yes* to complete the uninstall.

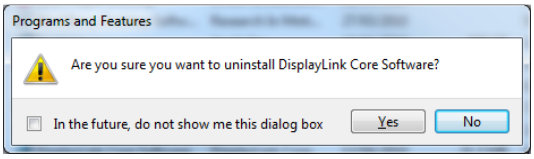
7.2. Uninstalling on Windows Vista and XP

The DisplayLink USB Graphics software can be removed from the Programs and Features utility under the Windows Vista control panel. (On Windows XP this is called Add or Remove Programs).

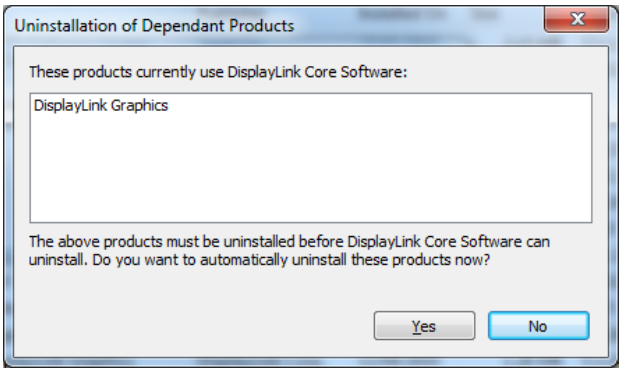
To uninstall the DisplayLink USB Graphics software on Windows Vista

1. Select Start > Control Panel > Programs and Features.
2. Select *DisplayLink Core software* and click on *Uninstall*.

   A windows confirmation dialog opens (if enabled)


Programs and Features
Are you sure you want to uninstall DisplayLink Core Software?
In the future, do not show me this dialog box
Yes
No

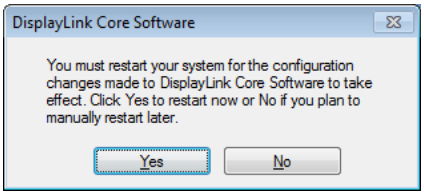
3. Click *Yes*.
4. A message may appear to state which software packages will also be uninstalled


Uninstallation of Dependant Products
These products currently use DisplayLink Core Software:
DisplayLink Graphics
The above products must be uninstalled before DisplayLink Core Software can uninstall. Do you want to automatically uninstall these products now?
Yes
No

   Click *Yes* to uninstall the packages that use DisplayLink Core Software

   The uninstaller automatically uninstalls the software.

5. Once uninstalled, you will be prompted to reboot

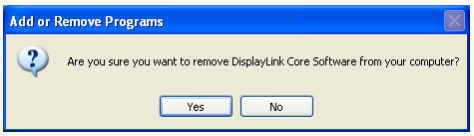

DisplayLink Core Software
You must restart your system for the configuration changes made to DisplayLink Core Software to take effect. Click Yes to restart now or No if you plan to manually restart later.
Yes
No

6. Click *Yes* to complete the uninstall.

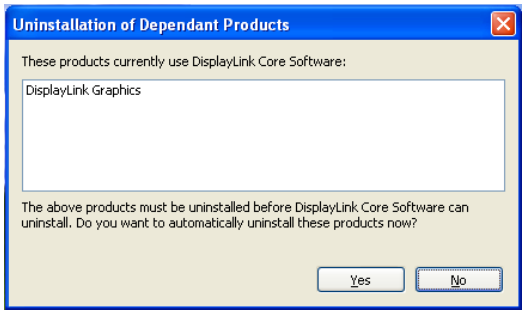
To uninstall the DisplayLink USB Graphics software on Windows XP

1. Select Start > Control Panel > Add or Remove Programs.
2. Select DisplayLink Core software and click on *Remove*.

   A windows confirmation dialog opens



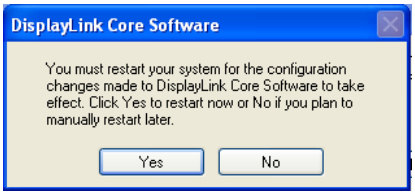
3. Click *Yes*.
4. A message may appear to state which software packages will also be uninstalled


Uninstallation of Dependant Products
These products currently use DisplayLink Core Software:
DisplayLink Graphics
The above products must be uninstalled before DisplayLink Core Software can uninstall. Do you want to automatically uninstall these products now?
Yes
No

Click *Yes* to uninstall the packages that use DisplayLink Core Software

The uninstaller automatically uninstalls the software.

5. Once uninstalled, you will be prompted to reboot
6. A message may appear to state which software packages will also be uninstalled


DisplayLink Core Software
You must restart your system for the configuration changes made to DisplayLink Core Software to take effect. Click Yes to restart now or No if you plan to manually restart later.
Yes
No

7. Click *Yes* to complete the uninstall.

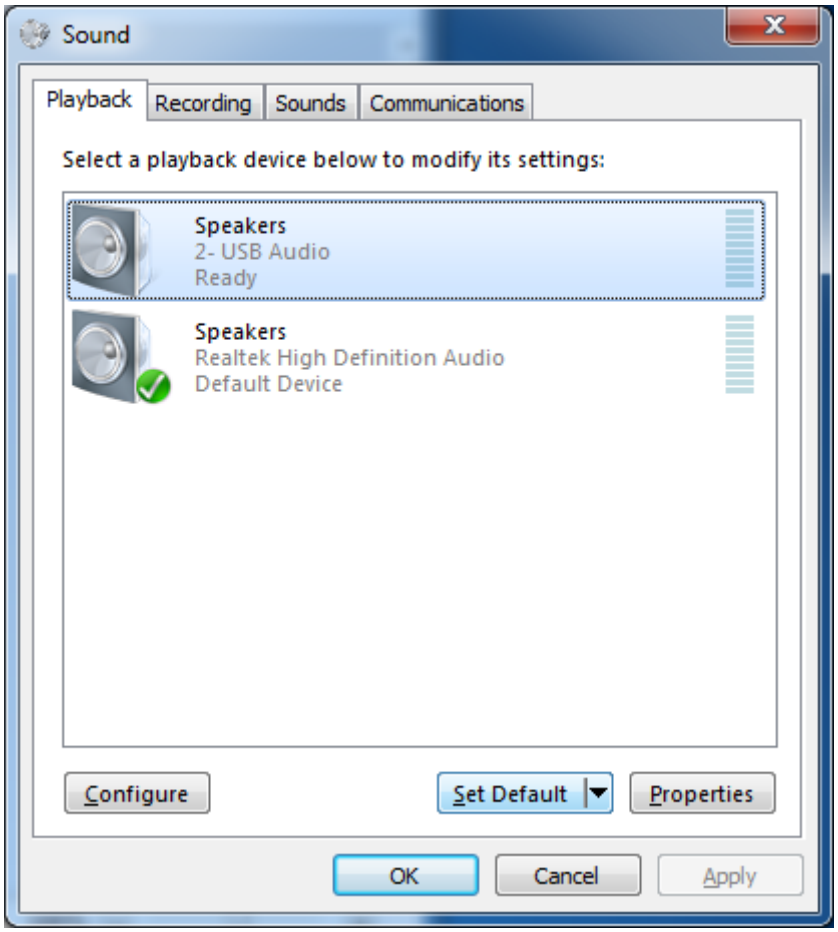
8. Audio Configuration

DisplayLink's DL-3000 family can support up to 6 channel audio. This section describes how to configure the audio settings. Although this is focussed on the DL-3000 USB audio, it may also apply to other USB audio devices.

8.1. Configuring USB audio on Windows 8, Windows 7 or Windows Vista

8.1.1. Setting USB audio as the default output

The audio settings can be opened from the DisplayLink UI, by choosing the *Audio Setup* option. The Sound window is shown:



To make the USB audio device default:

1. Click on the *USB audio* device

   Note: The actual name of this device will differ depending on the product.

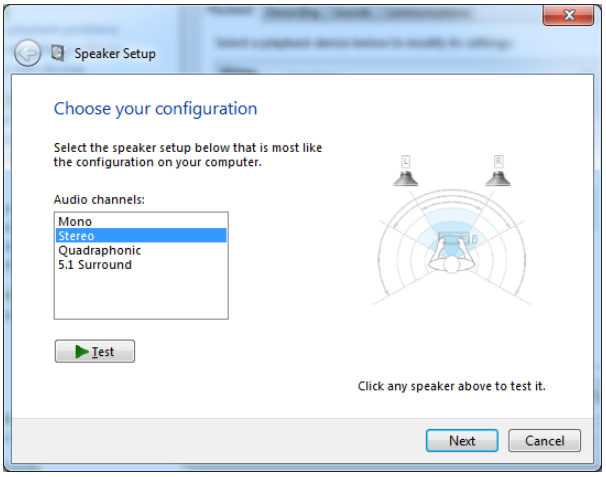
2. Choose *Set Default* to make this the default audio output

It may be necessary to restart applications using audio to force them to use the new default audio output.

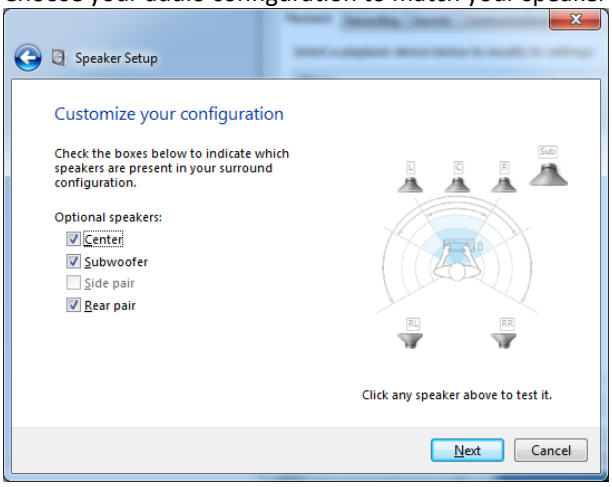
8.1.2. Configuring the audio output

To configure the audio output to match your speaker setup

1. Open the *Audio setup* from the DisplayLink UI
2. Select the *USB Audio* device
3. Click on *Configure*. The audio configuration window is shown



4. Choose your audio configuration to match your speaker setup. Click *Next*



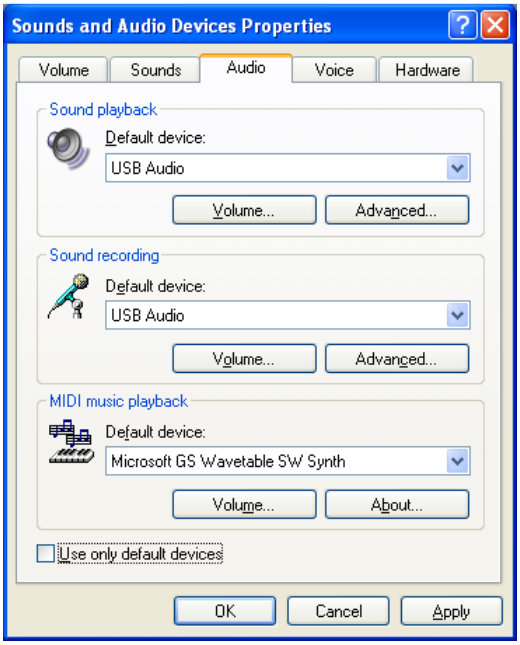
5. Customize your configuration as required and Click *Next*
6. Click *Finish*

8.2. Configuring USB audio on Windows XP

8.2.1. Setting USB audio as the default output

The audio settings can be opened from the DisplayLink UI, by choosing the *Audio Setup* option. The Sound and Audio Devices Properties window is shown

1. Click on the *Audio* tab
2. Under *Sound Playback*, select the *USB Audio Device*. This changes the default sound output to the DisplayLink audio device
3. Under Sound Recording, select the *USB Audio Device*. This changes the default recording inout to the DisplayLink audio device.



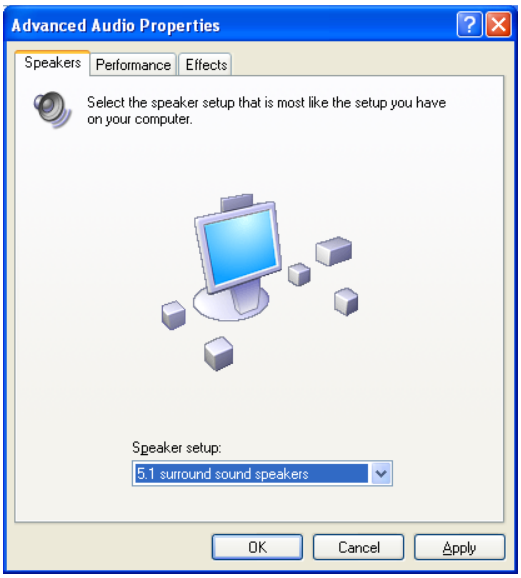
4. Click OK to apply the changes and close the window.

It may be necessary to restart applications using audio to force them to use the new default audio output.

8.2.2. Configuring the audio output

To configure the audio output to match your speaker setup

1. Open the *Audio setup* from the DisplayLink UI
2. Click on the *Audio* tab
3. Under *Sound Playback*, select the *USB Audio Device*. This changes the default sound output to the DisplayLink audio device
4. Click *Advanced*
5. Under the *Speaker Setup*, select your speaker configuration from the dropdown


Advanced Audio Properties
Speakers
Performance
Effects
Select the speaker setup that is most like the setup you have on your computer.
Speaker setup:
5.1 surround sound speakers
OK
Cancel
Apply

6. Click *OK*

9. Fit to TV

9.1. What is Fit to TV?

If using your DisplayLink product to connect to a TV, all of the Windows desktop may not be available. Many TVs will automatically 'overscan' the image they get by cutting off the borders and filling the screen with the image. On some TVs it may be possible to turn this 'overscan' off in your TVs settings menu, consult your TVs User Manual to see if this is an option for you. If you can do so, then you will not need to use the Fit to TV function of the DisplayLink

UI.

Fit to TV can be used to reduce the size of the Windows desktop on the TV screen.

Notes: Fit to TV only works in extend mode. If choosing the option while in mirror mode, the DisplayLink screen will change to extend and be placed above the laptop screen in Windows Display Properties.

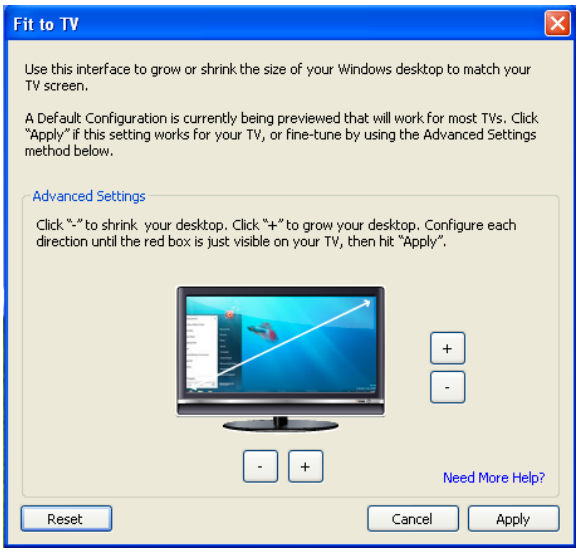
Fit to TV will only operate correctly when one DisplayLink device is connected. It is not designed to work on multiple DisplayLink screens.

Fit to TV does not support rotated modes.

9.2. Configuration

1. To configure Fit to TV, choose the option from the DisplayLink GUI.

The following interface appears


Fit to TV
Use this interface to grow or shrink the size of your Windows desktop to match your TV screen.
A Default Configuration is currently being previewed that will work for most TVs. Click "Apply" if this setting works for your TV, or fine-tune by using the Advanced Settings method below.
Advanced Settings
Click "-" to shrink your desktop. Click "+" to grow your desktop. Configure each direction until the red box is just visible on your TV, then hit "Apply".
+
-
- +
Need More Help?
Reset
Cancel
Apply

2. You will also see a red border on the DisplayLink screen

The red border shows the size of the new Windows desktop. Use the "+" and "-" controls on the Fit to TV GUI to change the size of the red border until it fits on the TV screen.

Note: Finer configuration of the size of the border can be achieved by holding down the CTRL key and clicking the "+" and "-".

3. Once the red border is at the edges of the TV screen, click "Apply" to resize the Windows desktop.

10. Additional Information

The following section provides additional information on the use of the DisplayLink USB Graphics software.

10.1. Media Playback

On Windows (XP in extend mode), the DisplayLink USB Graphics device can display media files and DVDs using the following media players:

- Windows Media Player 12 (http://www.microsoft.com/windows/windowsmedia/default.mspx)
- Windows Media Player 11 (http://www.microsoft.com/windows/windowsmedia/default.mspx)
- WinDVD 11 (www.intervideo.com)
- PowerDVD 13 (www.cyberlink.com)

The DisplayLink USB Graphics device can display media files and DVDs using most media players. Media playback in mirror mode (XP) or in Basic mode (Vista and Windows 7) is not recommended.

10.2. Using Multiple DisplayLink USB Graphics devices

The software supports up to six simultaneously USB attached screens. It is also possible that different sets of screens are being used at different times, for example two in the office and two at home. The software saves each screen's display profile separately. This allows for different physical positioning, or different resolutions, of connected monitors in the office and the home.

10.3. Standby and Hibernate, Shut down and Restart

If the PC that the DisplayLink USB Graphics device is connected to is placed into standby or hibernate mode, the display goes blank. When the PC is again powered up (and unlocked if necessary) the connected monitor returns to the same mode as it was before stand by or hibernation.

If the PC is shut down, restarted and logged in, again the connected display returns to the same mode as it was before shutdown.

10.4. DisplayLink USB Graphics with Multiple Users

DisplayLink USB Graphics work with multiple users on the PC. The mode settings are saved for each user so each can use their own desktop configuration.

10.5. Disconnecting the DisplayLink USB Graphics

If the DisplayLink USB Graphics device is powered off or the USB cable is removed from the computer, the display blanks. All windows and icons move to the primary screen.

On reconnection or powering up of the DisplayLink USB Graphics device, the display returns to the same mode as it was before disconnection. However, windows and icons that were previously on the screen will not be moved back.

10.6. Supported Screen Modes

There are three components that make up the screen mode:

Resolution: The number of pixels displayed on screen horizontally and vertically.

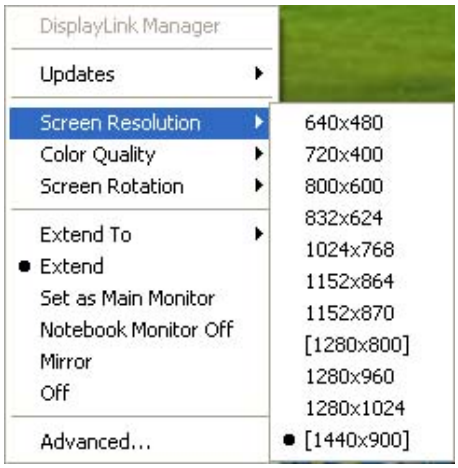
Color Quality: The number of different colors that can be shown on the screen at the same time.

Refresh Rate: The speed that the entire screen is rescanned. Higher refresh rates reduce flicker.

Some monitors advertise the supported modes through the VGA or DVI connector. If this is the case, the DisplayLink USB Graphics device identifies the supported modes from the monitor. If the monitor does not advertise the supported modes, the DisplayLink USB Graphics software chooses a set of common screen modes for the monitor.

10.7. Inferred Modes

Some modes in the DisplayLink GUI are shown with [ ] around them.



This occurs when connecting a monitor with a preferred mode higher than the maximum supported resolution of the DisplayLink device

In this case, the preferred resolution of the monitor cannot be supported. However we add lower resolutions of the same aspect ratio to be tried with the monitor. Modes in square brackets [ ] imply that these are modes not reported by the monitor, but have been made available by the DisplayLink software for you to try.

As these are inferred modes from the preferred mode of the monitor, they are not guaranteed to work with the display.

10.8. Error Messages

DisplayLink USB Graphics software occasionally displays user messages in a bubble in the notification area. The table below lists the user messages and their description.

Message	Description
Insufficient system resources exist to complete the requested service	This can occur when entering extend mode with low system resources. The PC does not have enough memory to start an extend display. Close down any unused applications. The situation may also be improved by rebooting the PC.
The requested allocation size was too large	This can occur if trying to mirror a primary display with a resolution above 2300x1700 (4:3) or 2600x1500 (16:9).
Incompatible Display Driver	This message will appear if the primary graphics card drivers installed are not WDDM compatible. Windows 7 is not designed to operate without WDDM drivers. Download and install the latest Windows 7 (WDDM) drivers for your primary graphics card.
The system cannot write to the specified device	This warning may be displayed in Windows XP after changing the display mode several times (e.g. Extend/Dock mode) from the DisplayLink GUI. It is caused by the OS memory becoming fragmented and the OS cannot allocate a frame buffer for the USB display. If this happens, detach and reattach the device or reboot the system to restore normal operation.

10.9. Further Support

Please visit http://www.displaylink.com/support or http://www.displaylink.org/forum

10.10. Troubleshooting

Minor issues can generally be resolved by:

- unplugging and re-plugging the DisplayLink device,
- changing the display mode via the DisplayLink GUI, or,
- changing the display mode via Windows Display Properties.

10.10.1. USB 3.0 support on Windows XP – Windows 7

USB 3.0 Host controllers on PCs are relatively new and the drivers may not be mature. Connecting DisplayLink devices to a USB 3.0 port may show issues that are not present when connecting to USB 2.0.

Please make sure your USB 3.0 host controller drivers are up to date, as this can solve many issues with DisplayLink connected on USB 3.0. DisplayLink provide a knowledgebase article with links to the latest host controller drivers at:

http://kb.displaylink.com/315

10.10.2. On Windows 8/7/Vista WDDM (Aero and Basic)

DisplayLink software works closely with the graphics card and there may be interoperability issues with some graphics cards. If this happens:

1. Try to upgrade to the latest graphics drivers for your primary graphics card.
2. Try to upgrade to latest DisplayLink software.
3. Report the issue via your support channel.
4. If necessary, boot into Safe Mode and use Windows' Backup and Restore Center to recover.